

CONSUMPTION:
HOW TO AVOID
IT, & WEAK EYES

B. SCHWARZBACH, M.D.


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Consumption : How to avoid it

AND

Weak Eyes

Two Lectures

BY

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Common-sense is the mainstay of health

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PREFACE

SINCE I have taken up my home in London, a number of my former patients, living in England, have earnestly requested me to republish a series of Lectures which I delivered during the progress of my work in Australia. After consulting friends in the medical profession on the matter, I have decided to follow the example of medical practitioners more prominent than myself, who have repeatedly expressed, publicly, their opinion on sanitary topics of general interest. In selecting for publication two lectures which, I believe, are likely to afford the reader the most benefit,

I bear in mind Aristotle's saying, that a still nobler aim than curing diseases, is preventing their appearance.

B. SCHWARZBACH.

Autumn 1897,
67 GROSVENOR STREET, W.

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CONSUMPTION—HOW TO
AVOID IT

CONSUMPTION, HOW TO AVOID IT ¹

A SHORT time ago a public appeal was made in this city in support of a most worthy establishment: a Home for Consumptives. It was pointed out that no battle of nations leaves so many victims behind as does the battle with the tubercular bacillus, an organism so small as to be seen only by means of a magnifying power of three hundred. About one-seventh part of all mankind succumbs to its destructive power, which attacks the rich as well as the poor, the gentle as well as the vulgar, and strikes home especially in those who have not reached the prime of life. Many letters have

¹ The chair at this lecture was taken by His Worship The Mayor of Sydney, Sir William P. Manning, K.C.M.G.

appeared in the daily papers on this subject, letters both from medical men and laymen, all supporting the philanthropic measure mentioned, which, however inadequate to meet the want, will be, nevertheless, the means of supplying some unfortunates with a pillow to rest their head upon and die. But not a single voice was raised that pointed to the root of the evil, no advice was given how the evil may—I say may—in some instances at least be averted. No attempt of a trial was suggested to check in this, our balmy colony, the darkness of disease—though it be well known that few other affections afford such favourable opportunities for doing something in a prophylactic sense, that means, in a sense to prevent it. ‘The best cure for consumption is its prevention.’ Certainly. But how will the multitude of the people know how to guard themselves if nobody tells them? True, many books and papers have been written on the subject, scientific books and popular books, but the bulk of the people do not buy such books, and do not take any notice of their contents except when pushed under their eyes

or chimed into their ears. The advice scattered in daily papers or periodicals about some sanitary items (perhaps about the danger of habitual mouth-breathing or the germs we may inhale with dust) are little noticed, probably on account of their fragmentary nature. And so I have set to work during some evening leisure-hours to write out this lecture. Gladly would I hail the advent of another more prominent medical man in my place. But as nobody comes forward, I remembered that science is an international property also in its distribution, and I remember furthermore that since that public appeal was made to assist in the maintenance of a Home for Consumptives, over two thousand persons have died in the Australian Colonies of tubercular affection, and that in all probability two thousand more have contracted the fatal disease, and are now marching along the high road of destruction.

Will you allow me one remark as to why I believe myself competent to give the advice which I intend to give? Fate, in the shape of intermittent bad health, has, ever since my early university days, forced me to wander in

search of knowledge on the subject, and, in the course of years, induced me to visit almost every renowned health-resort throughout the world. Being a man of ordinary power of observation and fairly common-sense, I could not help seeing with open eyes and listening with attentive ears, and what I have observed I intend to tell you to-night, condensing into the space of one short hour a bird's-eye view of the opinion of the international scientific world on the subject.

CAUSE OF THE DISEASE

IT may be taken for granted that every one of you who has felt some interest, and paid the least attention to the nature of tuberculosis, knows that the direct cause of the disease is a microbe, which, although the ancient Greeks and Romans are said to have suffered from its effects over two thousand years ago, has only been discovered in recent years. Without the tubercle bacillus there is no tubercular affection. Wherever this bacillus is found, no

matter in what part of the body, tuberculosis must be diagnosed. The organs most frequently affected are the lungs, and the question why this is the case has been differently answered by different investigators. It has been explained by some that the principal carrier of the bacillus is the expectoration of consumptives. This, it is asserted, dries in the air, and is inhaled by other people as part of the dust. In this way it is introduced into the lungs, infecting the same with the disease. This explanation is very simple, but happily for mankind, the process of infection is not quite so simple, otherwise the whole human race would have been swept from life long ago. There is probably no person, living in contact with other persons, who does not again and again inhale tubercle bacilli, without, however, becoming tuberculous. It has been proved that it takes from two to three weeks absolute undisturbed rest to allow the microbe to plant itself firmly in any tissue. But such an undisturbed rest is beyond my comprehension in an organ which, like the lungs, is acting without interruption day and

night like continuously working bellows, and the mucous membrane of which is covered by a ciliary epithelium, constantly in motion to clear the passage of any disturbing elements, including dust and phlegm. Only in cases where the epithelium of any part of the air-passages has become destroyed, would it be possible for the bacillus to settle and multiply. Another manner of introducing the germ is by way of lymph channels. This may happen if a bacillus comes in contact with any sore part of our skin, no matter how harmless the sore may appear. We often have scratches on hands or face, which may act as open doors to the invading enemy. The latter can be carried by lymph movements to distant parts of our body, developing perhaps after a lapse of years only. We can thus explain why strong, robust people become victims to the disease, should other conditions have been favourable to the augmentation of the number of bacilli. Such conditions may be brought on by any cause of a constitutional decline, by any acute illness, loss of blood, mental or bodily over-exertion, excesses in *baccho et in venere*—in fact

by any weakening influence. It is a curious fact that it is our lungs that become principally infected, though it has been asserted that we swallow probably more microbes than we inhale. Yet tuberculosis of the digestive tractus is a comparatively rare occurrence. The constant peristaltic movement of the intestines prevents doubtless the bacillus from settling into rest necessary for propagation. Yet there is a possibility that with the absorption of food the bacillus may become absorbed as well and carried to the apex of the lungs, from whence no carrying further is possible.

ABSORPTION OF POISON

THAT the tubercle poison is often swallowed in drinking milk is an established fact. Five per cent. of all cows are said to be tuberculous, and fifty-five per cent. of the milk of these diseased cows is said to be infectious. Though the danger of becoming tuberculous through inhaling the germ be not nearly so great as is the general opinion of the laity, it belongs,

nevertheless, to the domain of common-sense to be careful in this respect. To kiss consumptive people repeatedly, to allow anyone to cough into one's face, to use the same wash basin, the same towel, or the same handkerchief—all this should certainly be avoided. Relatives of consumptives, or better, the afflicted ones themselves, should adopt all necessary precaution. There being no doubt that the expectoration of patients is the principal carrier and distributor of the germ of phthisis, the expectoration should at once be destroyed or disinfected. Such a precaution—which, however, cannot be strictly adhered to in all cases—would certainly help to reduce the danger of infection. The theory of the mode of tubercular infection may differ with some, but there is no difference of opinion as to a certain disposition of the human organism being necessary to allow the disease to take a firm hold of the same. Without such a theory it would be impossible to explain some very puzzling facts. We notice, for instance, that many weakly-constituted sickly-looking and emaciated people, who

suffer from all sorts of affections, and who would be considered to be amongst the first victims of consumption, escape this disease, and escape it even when they live under the same surrounding conditions as other stronger built people, who, nevertheless, easily succumb to its destructive power. There must be some alteration of the tissues and cells, a molecular sensitiveness of atoms, or a microscopical change of the plasm, which affords the poisonous agent a fertile soil for its consuming work. Some obscurity doubtless prevails in this regard, and we cover our ignorance with the word 'predisposition.' Such a predisposition is certainly more to be dreaded than infection itself, which, as I have said, is often harmless. The very fact that the rich who have at their service all hygienic improvements of modern times, are victims as readily as those whose poverty is associated with bad hygienic surroundings, proves that, to an extent, tuberculosis is a disease not subject to our surroundings only, but to our own inner self, to our habits and notions of life.

HEREDITARY INFLUENCE

SOME obscurity also exists with regard to our knowledge of hereditary influence. It is not that a direct inheritance of the tubercular poison takes place, but more probably that a peculiarity of cellular and molecular conditions, of which I spoke, is inherited, paving the way to an easy acquirement of consumption. Rarely will this become apparent before a person attains maturity. The greatest percentage of deaths from phthisis occurs between the ages of twenty and thirty-five years, during which period not less than 55 per cent. of consumptives die. The exceptional cases, where young children show signs of a developed tubercular affection, are absolutely hopeless. But the possibility of counterbalancing, at an early stage of life, apparently predisposing moments need not be regarded as being hopeless. Such predisposing moments, in fact the visible signs of an hereditary local aptitude for the acquirement of the disease, we must consider to be existing if we find large lungs with a corre-

spondingly small anatomical heart, if we find the muscles of the chest poorly developed, and a rational blood-circulation in lungs impaired by too narrow arterial blood-vessels. In these cases it would be the duty of parents, guardians and medical advisers to insist from early youth on a strictly-defined mode of nourishment, physical training and a carefully-guarded mental education. It will depend entirely on them if such children will grow out of it, or grow into it, so to speak. Scrophulosis is often a forerunner of tuberculosis. We should always bear in mind, no matter from what point we consider the affection, that only an organism with a decreasing power of vitality will be a happy hunting-ground for the bacillus. The whole question regarding the advance of, or the recovery from phthisis, is far more a question of bodily vigour than of microbes. Everything which will help to keep up our bodily strength and vigour will also help to prevent, and everything which will decrease our strength will assist in the acquirement of consumption ; and from a purely practical point of view we should deal with the subject principally

on social and hygienic platforms, and secondly only in the laboratories for conducting bacteriological experiments.

PRESERVATION OF HEALTH

My simple duty, therefore, to-night—having given an outline of some of the principal characteristics of the nature of the disease—is to answer the question: How can we best retain the strength of our body? Or better—How can we make a weak body strong? People enjoying robust health will not think much of disease in general, of consumption in particular. For these my words will have a theoretical interest only. But the weakly-constituted, the delicate — especially those who have had mournful experience in relation to personal friends or members of their own families—to these my advice will be of practical significance. I shall try not to be too dogmatic in my utterances. It is self-evident that, if all people were always to live strictly according to the dictates of nature, most diseases would be unknown, and the majority of man-

kind would die, bar accidents, the natural death of old age only. But this cannot be, as it is not within the power, and not even within the inclination of human beings, to live always strictly according to such laws. Life, at its best, is a struggle, and if we would keep a perpetual watch with regard to all we do, and to all we do not, the struggle would be heightened to an intolerable degree. Yet, with some little effort, we can do much to assist a rational enjoyment of health and to cultivate a philosophical mind. How we dwell, what we eat, how we dress, what we breathe, our work, and our recreation—all this should be considered, partly from a hygienic, partly from a philosophical point of view. In a narrow sense of the word many hygienic measures are so self-evident that it would be folly to dwell on them at any length. Sound hygiene is like sound reason, an outcome of common-sense ; yet, if self-evident, hygienic measures are, nevertheless, often sadly neglected ! For instance, all people know how important it is for us to breathe pure, fresh air ; but how often is this cardinal law of sanitation ne-

glected ! Let us, for example, look into the most important room of a dwelling-house—the bedroom—and we find that in one half of all houses of the working class this is the smallest, the darkest, and the least ventilated of all rooms ; and yet fully one-third of one's life is spent in it. Surely, if people have to sleep in small apartments they can, and should, take care that their lungs obtain during the night the same healthy nourishment as during daytime. The overburdening of bedroom windows and bedsteads with heavy curtains and other hangings should be avoided as much as possible, in order to assist ventilation. Some delicate people have a disinclination to inhale what they call night-air, not thinking that the air at night is as valuable and necessary for our blood as is the air breathed in daylight. No wonder that, after rising in the morning, instead of feeling fresh and invigorated by a good night's rest, they feel languid and tired before their daily work commences. To sleep in pure air does not compel one to sleep in a draught, though it be well-known that consumptives can endure free ventilation better

than non-consumptives, and are less liable to chills. If it is not opportune to keep a bedroom window open, ventilation can certainly be accomplished by leaving the door partly open and a window in the passage or in an adjoining room. To act thus is advisable for the healthy, and it is imperative to those possessing delicate lungs.

PURE AIR

LET me say here at once that the air-treatment is by far the most important in cases of suspected or developed pulmonary tuberculosis. Air, and again air—I mean pure air free from dust and rich in ozone—no matter where we breathe it, so long as we breathe enough of it, and breathe it rationally—will help better than all medicine in the world to prevent or cure cases of consumption. And air is so cheap, not only that kind necessary for our mere existence, for which the dying consumptive so touchingly yearns :

Oh, give me but a little air,

You, who have air so much to breathe !—

but I mean hygienically pure air, necessary for the preservation of our health, and which, with the help of a little consideration we can surround ourselves with during the whole or at least the best part of every twenty-four hours. It is an intellectual crime if we neglect a constant thorough ventilation of shops, offices, and dwelling-houses. Some regions of the globe are said to have such an invigorating air that people who live constantly under its influence are considered to be absolutely immune in regard of phthisis, which means that phthisis is unknown amongst them. This is not the case. There is no inhabited part of the earth where pulmonary phthisis does not in some measure occur.

'THE CURSE OF CIVILISATION

CIVILISATION has proved a Danäic gift in respect to health and bodily vigour. Some tribes living in a state of nature, by their outdoor life, their nomadic habits, and, perhaps, by unconsciously adhering to simple and natural conditions in their mode of living, are less

predisposed to the weakening influence of disease than other more civilised and because civilised often more degenerated people. Take, for instance, the Maoris in New Zealand. Before the white race broke in upon them, as long as they had to work hard for their daily food—fishing and planting, and very often fighting—as long as the use or better misuse of alcoholic drink was unknown to them, the Maoris were a people of remarkable bodily vigour, and tubercular affections are said not to have been known amongst them to any great extent. And to-day? As the people are living by the help of government support, they have become lazy and indolent, and are being deteriorated by drink and imported diseases, hence tuberculosis is decimating the tribes rapidly, and will be the principal cause that, after a few more decades, the Maori race will belong to the past.

SANATORIUMS

I SAID before that it does not matter where we breathe pure air, so long as we breathe

enough of it. By this sentence I did not intend to infer that some climates are not more salubrious than others. Be the air on the Australian sea-shore ever so pure, if weak-chested people could afford to go during the summer months inland to places situated on a higher elevation, it would certainly be of advantage to their health. Not perhaps in all cases, because we find that, though moist warm weather exercises an enervating influence on the majority of the delicate, it has a soothing influence on some who are afflicted with nervous affections. In Europe lung-patients are often sent with equal benefit to moist Madeira as to the dry climate of Egypt.

During the last few years I have twice visited the most renowned climatical resorts of the world: in America, in Australia, in South Africa, Teneriffe, Madeira, Switzerland and the Black - Forest. Nowhere, I can assure you honestly, did there appear to me to be existing any sanitary conditions which are not within our own easy reach. The lower part of the Blue Mountains in the winter, the

higher parts in the summer and the elevated portion of our southern railway line, will, in conjunction with the dry crisp winter weather of the plains and downs, compare favourably with most air sanatoriums of world-wide fame. But also in this respect the disinclination of people to believe the prophet at home repeats itself, and the inclination to seek those advantages far off, which we have waiting for us at the steps of our own home, so to speak. Mountain climates have certainly an invigorating power of their own. The Alpine regions, as we find them above 4000 feet in Central Europe, have no practical value for Australia, because 4000 feet above sea-level in Switzerland would climatically correspond in our latitude with an elevation of about 6000 feet. And again, 3500 feet, as we have it approximately in some parts of the Blue Mountains, would correspond with not much more than 2000 feet in Switzerland. It is this height which is considered to be so mildly irritating only as to be congenial to all classes of sufferers, young and old alike. The same cannot be said of a higher Alpine

climate in general, where a decreased atmospheric pressure, the great rarefaction of the air, the rapid changes of temperature and the intense evaporation power makes it directly unfit for many invalids, especially those suffering from hemorrhage of the lungs, from affection of the heart, and from a greatly reduced resisting power of the organism. The beneficial influence of an air-resort, as we find it in the Blue Mountains, of medium height, consists principally in the increased assimilation and change of matter. The red blood-corpuscles—these carriers of life—are changing at a quicker rate, and a larger number of new ones take the place of the old. This again gives an impetus to an increased function of all our organs, including the lungs, and a higher activity reigns in the chemistry of our whole body.

RATIONAL BREATHING

OF much import is a rational mode of breathing. As a rule, the process will be less ex-

tensive the less we think of it. But to breathe extensively is in many cases of cardinal importance—not so much for the advanced consumptives, whose mode of breathing should be regulated according to existing symptoms—but more for those who have reason to be afraid of becoming consumptive. It is a well-known fact that by an increased muscular exertion, such as quick walking, climbing, gymnastic movements, we are compelled to breathe more vigorously than otherwise, not intentionally, but automatically by way of reflex movements; and if such breathing is done methodically and in proper limits, the effect will be, particularly to the young, a tonic to the action of the heart, and, indirectly, a tonic also to the action of the muscles of the chest. This will not only affect for the better the change of air in the lungs, but the increased arterial pressure will quicken the change of matter in all other organs. This is the reason why a holiday in the mountains gives also to our mind a feeling of buoyancy and freshness.

How is it now that the air in the lower

country is less invigorating than that of a higher elevation? Why can we not obtain the same benefit in the former as in the latter? Actually the lower air is richer in oxygen, and therefore richer in quality. But because of this we are enabled to inhale the necessary amount of oxygen for our blood-production in an easy manner, and with less effort, than in more rarefied air, which, as I said, is poorer in oxygen. Consequently our breathing of the former will be more superficial, leaving some parts of the lungs inactive, and therefore prone to become easily affected. The air of mountains is the more rarefied the higher the elevation, and the lungs are correspondingly exerted and expanded, bringing into action also parts which in the richer atmosphere of the downs and sea coasts would probably remain idle. The physiological effect is as stated before. It is a matter of course that the deeper automatical breathing in rarefied air may be compensated in a lower atmosphere by artificially expanding the lungs, so-called lung-gymnastics. Or the compensation may be effected through other sanitary influences.

THE SEA-CURE

WHO, for instance, will deny the great benefits of the air of the open sea on lung and throat patients? Long sea-trips have at all times been considered a kind of panacea for delicate lungs. But on this point I opine strongly that a long sea voyage in a comfortable steamer is of greater advantage than if made in a comfortable sailing vessel. Some may be benefited by the last-named mode of travelling, but I have also repeatedly heard of a marked advance of phthisis during such trips. Especially to nervous people—and most delicate people are nervous—a sailing voyage from Australia to Europe, or *vice versa*, of about three months duration, will tax the patience and the temper to the utmost; depressing effects will fully counterbalance the otherwise, perhaps, beneficial ones. Besides, the sea air, invigorating as it is in cool latitudes, is often very enervating in the tropics. Where sailing vessels are detained—becalmed, perhaps—in the latter regions, a condition may develop for the

delicate, which must be looked on as an acute attack of anaemia—a condition which may endanger life itself if not checked soon. On a steamer, with a certainty of daily advance, with the varieties created by fellow-passengers, and, not the least, with a good table, the spirits of an invalid traveller are kept up better, and this helps also to raise the bodily strength. For people seeking rest and sea air, who have time and money, and who are good sailors, I hardly know a better method than the one just mentioned, by which the equilibrium of mind and body could be quickly restored, and which could prevent, stop, or remove a weakness which may have threatened to develop into organic disease. Ah, yes! For people who have money and time to spare! It is a regrettable fact that not all who are predisposed to phthisis have time and money, and few only are able, in time of need, to throw up their work, leave their homes, and travel, or spend a longer time at a suitable climatical resort. For those, for the indigent sufferers, we have to find other helps. It is difficult in many instances, but it can be

accomplished. People can be benefited sometimes in the simplest possible manner, perhaps by changing the position of a bedroom, or by a change of the milkman. Let me give a practical demonstration how easily a condition for the better may be brought about without much effort and money. Of course I speak principally of those only in whom an organic lung disease has not yet fully developed. The chronic consumptives, though the advice to, and the treatment of whom, may not vary much from a prophylactic treatment, are outside the benefits which may be derived at from a short lecture.

MODE OF LIFE

LET us suppose a bank clerk or an employe of a firm, who is hereditary delicate, has a hacking cough, loses flesh, and shows signs of a weak chest. If he lives at a city boarding-house, let him shift his abode to a suburban place, away from a dusty thoroughfare. Let him take care that not only his bedroom but the office in which he works be accessi-

ble to fresh air, and that his writing-desk be so placed as to enable him to sit upright when using it. An additional boiled egg to his breakfast of porridge will not break his purse, nor will the price of an extra glass of milk or two, which he should arrange to have between meals. After the removal of the hacking nature of the cough (which, if not 'organic,' can often be stopped by very simple means—perhaps by drinking at bedtime a glass of hot milk with soda water, sweetened with honey), he should indulge mornings and evenings in systematical breathing gymnastics in order to increase the lung capacity. There are different methods of doing this. Let him adopt the easiest. During the time of deep inspiration he should bring the palms of his hands together above his head, letting the outstretched arms come down again at the time of expiration. This has to be done regularly till the deep breathing has become natural to him. Also a systematical deep yawning in pure air six or ten times in succession may answer the purpose. Let him avoid

late suppers and excesses of every kind, and if he is careful and persevering in his efforts to become strong by living a year or two according to the above indications, he will be astonished himself to find how well and heavy he will get. But I hear someone exclaim: 'What about the very poor who are unable to live at a suburban boarding-house, unable to provide the extra glass of milk daily, and an extra boiled egg? Who have to sleep on the premises at night and work hard during the daytime?' To these I answer that it is very unfortunate that not all the distress in the world can be relieved by private philanthropy, not even by aid of the state. The sleeping in the open air, if the sleepers do not catch cold, will certainly not be detrimental to weak chests but on the contrary; and the hard bodily work during daytime may also help to keep at bay some factors which, without such work, do predispose to phthisis. Not the hard-working labourers acquire tuberculosis easiest, but more the mental hard workers of a better situated class. Far fewer people fall ill

through bodily overwork than through overwork of the brain.

FRESH AIR LEAGUES

PRIVATE philanthropy could do and is doing a great deal to facilitate the conditions of the poor, who are in danger of becoming permanently affected in their lungs. I am glad that, by the establishment of fresh air leagues, a step in the right direction has been taken in this city. I do not know of any other philanthropic organisation which could do an equal amount of good to battle effectively with the advance guard of consumption. But I should like to draw the attention of the committees of these organisations to the fact that, while a short change of climate and scenery will already benefit those who simply wish to unharness their daily wear and tear, people who are likely to be in danger of becoming affected in the chest should be sent to the country for change, not for two or three weeks, but for two or three months, if any permanent benefit is to result from their farm-life. All our efforts

should go to increase the number and extend the usefulness of fresh air leagues. We also should understand that change, properly understood, is only another name for rest.

Having laid so much stress on the importance of pure, wholesome air for the delicate lung, it may be suspected that I consider such air to possess an all-healing power. This is not the case. A good climate is much, but it is not everything. If the entire mode of living is not in strict accord with a mode of strengthening and invigorating, people will succumb in the best climatical surroundings easier and earlier than, with such caution, in the densest part of a large city. For instance, stooped shoulders and sluggish breathing are responsible for more cases of consumption than the life in an unwholesome, dusty atmosphere. What people eat, what they drink, how they dress, their work and their pleasures—all this is of vast importance, and should be duly considered. But before I proceed I will state that, by statistical evidence, which is at my command, I can prove that the death rate of phthisis is higher in large cities than in small towns,

higher in small towns than in the open country, higher with people who work in the country but in a dusty atmosphere, than with people whose field of labour is free from dust.

MEDICINE USELESS

I HAVE not said much about the invigorating effect of medicine, because medicine as a strength-giving power, though no doubt often effective in itself, is of very uncertain merit applied to consumptives. A glass of good wine is often a better tonic than the most elaborately-prepared compound. The purely medical treatment of phthisis has become bankrupt indeed. All the hundreds or thousands of supposed remedies have been of no avail. There are some few drugs, like creasote, which, in the initial state of consumption, seems to have the effect of arresting the progress of the disease—this, probably, not because it destroys the bacillus itself, but because it impregnates the tissues and cells unfavourable to a quick multiplication of the microbes. Such is the

belief of some of the advocates of the creasote treatment. In my own humble opinion, the action of this drug is merely one of increasing the assimilation of food, thus strengthening and fattening the body, and fortifying the resisting power against the invading enemy. All honest physicians will acknowledge the uncertain effects of so-called anti-consumptive medicine, and many believe more in 'exercise on horseback and in beefsteaks'—to quote an English authority—than in phosphates, iron, and quinine. The tuberculin treatment is in its infancy only, and has not, as yet, justified the high attributions attached to it.

Consumptives are very changeable as to the mode of treatment, and, fortunately, also hopeful to the very end of life. We find again and again that the sufferers, not gaining any benefit by the advice of the educated physician, will go to the uneducated quack in a hope similarly to that of a drowning man, who clings to a straw. I know very well that in a higher sense of the meaning the 'healer' cannot be trained, but must be born for his calling. Training and theoretical knowledge will not make a success-

ful practitioner any more than wearing a tall hat or scrupulously adhering to all the ethic demands of the creed. The most appreciable quality of a medical man is not dead knowledge, but action. And the public recognise instinctively that a head crammed with science does not always belong to a man best capable to direct affairs at the bedside of the sick. But the public should not forget that actual scientific knowledge is the cardinal foundation of the practice of genuine healing.

THE STRESS OF LIFE

OUR age is the age of nervous strain to a high degree. Let us hope that existing anomalies which are responsible for the increased nervous tension may pass over the generation like a wave, leaving a wholesome reaction behind. But while it lasts, many will be the victims. The existing chase after fortune, fame and pleasure, excesses of every description—in short, the high pressure of life, are greatly responsible for a downward condition of our physical strength, producing a hyper-

sensitiveness of our nerves, thus levelling the way to the detrimental action of wasting diseases. After all, the whole secret to prolong life is not to shorten it. I think if we could return to a, let me call it 'philosophical' mode of life, it would greatly benefit our health. Of course, no one can separate himself from his own nature, and we cannot forcibly change our temperament, but I know by experience that it is possible to train oneself into taking a philosophical view of people and things. Many little annoyances and frictions would lose their sting, the mental fleabites would be less irritating, if we consider what difference it will all make in a few years hence—yes, sometimes in a few days hence. I can quote cases where repeated little frictions about trifles have unhinged the mental balance with some, and have laid the foundation to pulmonary disease with others. Our delicate female world should be especially careful not to overstrain the strength of their nerves—an idle advice on my part, I am afraid. Some of my gentle friends' natures I know to be so elastic—and I believe they are the

prototypes of what is wrongly called the weak sex—as to be able to dance vigorously through half a night, after having been laid up in an exhausted state during the whole of the day as a result of a ball the previous night. It speaks well for the elasticity of female nature in general that the number of sufferers from phthisis seems to be about equal in both sexes. In France and Germany the death-rate from consumption is slightly larger in females than in males. But in most other countries it seems to be the reverse.

CORSETS AND CONSUMPTION

WHEN an American physician tells us, in a recent article in the *Century*, that the wearing of corsets must be regarded as a check to pulmonary consumption in females, I beg to be allowed to differ most emphatically. It is doubtless true, as that gentleman says, that the apex, or the uppermost part of the lungs, is brought better into function by corset-wearing than without it. But it is equally true that, as he does not say, the corset is

the enemy of the lower parts of the lungs. The importance of these parts is proved by the so-called abdominal breathing of men, which is principally performed by the lower half of our respiratory organ. Besides, tight-lacing (and I only speak of such) will do much in partially suppressing the pulmonic blood-circulation, thus impairing the rational nourishment of the lung system. Indeed, a woman has more chance of keeping free from pulmonary consumption without tight-lacing than with it. It is also possible that lacing is the cause of the predominance of heart diseases in females. I should not be astonished if, with a still greater freedom of movement given to women in fighting the battle for existence, with their introduction to the toil of strength-absorbing occupations, a still higher predisposition to acquire phthisis and cardiac affections were to develop amongst them than has been the case hitherto. Much as I agree with many arguments advanced by the champions of female emancipation, I know the unerring physiological laws of the female system to be of such a nature as to set a

limit to its power. And if that limit be forcibly overstepped, the question will not be : Are the female workers killing the men as wage-earners? but : Are they not killing themselves in real earnest? Speaking of corsets reminds me of the importance of a wise selection of

PROPER CLOTHING.

WE expect from our clothing not only that it shall protect us against the inclemency of the weather, but also that it shall act as a bad conductor of heat, thus preventing a too quick evaporation of the warmth of our skin. It is a great mistake to believe that clothing will produce warmth. It only will retain the bodily warmth, more or less, according to its quality. Linen, being an effective conductor of heat, should not be worn close to the skin, nor any excessively rough material which may irritate the skin too greatly. Considering all points I do not hesitate to advise the wearing of not too heavy and not too light, but pure woollen underclothing, winter and summer alike, especially to those people

who, on account of 'climatical' sensitiveness, should carefully guard against a too sudden change of temperature on the surface of the body. The danger of catching cold has at all times been considered to be of great importance to people with weak chests and throats. With such people repeated attacks of catarrh often pave the way to tuberculosis. Without intending to repeat any of the theories as to the actual nature of a 'cold,' I wish to emphasise the opinion of many to the effect that well-selected underclothing will help to strengthen and harden the skin. By the expression 'a hardened skin' I do not mean a skin which is hard and tough. On the contrary, I mean a skin which will show sensitive nerve-endings, and which will promptly react on any outward irritation so as to compensate quickly any obnoxious outer influences. The hygiene of our skin is a very important one in all and every disease. I do not know of another nation, except the British, among which the better classes take more to heart and live up to the proverb: 'Cleanliness is next to godliness.' But this

proverb has not endeared itself to the same extent to the lower classes. Even in this town, where so many opportunities are given for nursing the skin function, and where the heat of the summer makes such nursing a necessity, there are some who do not take a bath the whole year round.

HOW TO BATHE

REPEATEDLY do I hear people express a fear of taking a bath, a fear of catching a chill. And, instead of regular washing or bathing, these people cover their chest with three or four, and often more pieces of flannel in the absurd belief that in such a manner the lungs may be better protected. But the lungs do not need being kept particularly warm. If feverish, the breathing of cool air is of more advantage than that of warm air. By overburdening and overheating the outer chest, the congestion of the inner part may increase. A short cold bath every morning will tend to lessen the susceptibility of easily catching cold. In winter the chill may be taken off the water and the stay in the bath may be of short dura-

tion. The best proof of its good effect is the sensation of comfort and warmth felt a few minutes afterwards. I wish, however, to give a word of warning with regard to shower-bathing. Shower-bathing has the good effect of forcing, by way of a shock, deep breathing, but I have, also, on many occasions, traced a chronic catarrh in the head, especially in the ears, to the habit of people applying the shower to the head longer than to other parts of the body. As the reaction of the blood-circulation is strongest in those parts which are most cooled off, it stands to reason that the longest application of the force of the water to the head, will afterwards react with a stronger congestion of blood. 'Head cool and feet warm,' is a sanitary rule, not *vice versa*.

HOW NOT TO BREATHE

NEED I say that a cold in the throat, bronchials and lungs may also be brought on by habitually breathing through the mouth instead of through the nose, and that breathing in such a manner will facilitate the introduction into the lungs of dust and other harmful organic substances?

The mouth is not made for breathing purposes. The natural air passage goes through the nose, and care should be taken to keep it free from obstruction and disease. A diseased nose does not allow the rational breathing of pure air. Air passing through a diseased channel into our system will change from pure to impure. Another advantage of nose-breathing is the bactericidal action of the mucous of the nose. The nasal cavities suspend, and in many instances destroy microbes, including the tubercular bacillus, which, if inhaled by way of the mouth, would be brought in direct contact with the bronchials. And, lastly, the air passing through the nose will enter the lungs in a temperature congenial to its absorption. There is no doubt whatever that if we can prevent habitual mouth-breathing, many affections of the throat and of the lungs will also be prevented.

HINTS ON DIET

No paper on the prevention of consumption could be written without answering the all-

important question: What shall people eat who are weak in the chest? I answer: Any nourishing food they like and which they can easily digest. Lung patients with a good appetite and corresponding digestion carry their best friend with them. Let it be their care to keep this friend in good humour and in good form, because he is easily put out of sorts and if so refuses to act as a friend. I find that many delicate people, and those who lose flesh, are better off if, instead of eating three regular meals a day, they take more frequently smaller quantities of nourishment, of which good milk is the most suitable. Even when awakening at night they should have a cup of milk handy, which would neither impair digestion nor disturb sleep. A pinch of bicarbonate of soda or of common table salt sometimes helps to make the digestion of milk easier. By repeatedly taking small quantities of nourishing food, lost flesh is regained more quickly than by eating three heavy meals a day. I can regulate the weight of my own body by drinking, or leaving off drinking, an extra pint of milk during the hours between breakfast

and luncheon. If a person infected with the dreaded germ is gaining weight, the battle goes in his favour. Naturally it is of importance that the quality of the milk should be good, which, I regret to state, is not always the case with milk we get for household purposes. In German cities the local police have taken the inspection of milk into their own hands. Often you can notice a milkman stopped in the street by a policeman, who, trained for the purpose, then and there tests the quality of the milk with a lactometer. If the milk is found to be watered, the milkman will be punished in a similar manner as a baker is punished for selling bread of light weight. And milk is to many a more important nourishment than even bread. Eggs, fortunately, cannot be adulterated. Giving eggs to delicate children, nurses should be discouraged in following their habit to let children eat the yokes of eggs only; the white part, if not too hard boiled, will be of more benefit than the yellow part.

Some delicate patients, if professionally advised to take this or that food, often exclaim: ‘I

do not like this and I do not care for that.' I have no patience with people who, being anxious to recover, give such an answer. I am of opinion that patients who do not exert themselves for the purpose, do not deserve to improve in health; without effort there is no good result. There are a few isolated cases in which a certain aversion—idiosyncrasy—does exist against some kind of food; for instance, fish. But by far the majority of people are following a sickly inclination only in often preferring indigestible trifles to plain, wholesome nourishment. I heard a lady once using the following queer argument; she said, 'I am glad I do not like porridge, because if I liked it I would eat it, which would be very unpleasant, because I don't care for it.'

If persons suffering from delicate lungs easily digest fat, I would advise them to eat as much of it as they can without hurting their digestion. The treatment with cod-liver oil is also consisting only of an easily-assimilable fat; otherwise the oil has no anti-tubercular properties. An addition of plenty of butter, spread on bread to the popular five o'clock tea, is a

pleasant way of helping to introduce pure fat into the digestive organs. Also sugar is fat-producing, though it has not justified the claim of being a strengthening food. The medical superintendent of a large establishment in Germany, for the treatment of consumptives, drew my attention to the observation he made of a free use of common table salt seeming to have some kind of favourable influence on tubercular ailments; the bacillus does not seem to prosper in a fluid rich in natrium. Examinations made in Vienna prove the blood of consumptives to be comparatively poor in natrium salts, but rich in kalium salts. It may—this observation—be a hint to allow ourselves the free use of table salt. But I give this advice with all due caution.

With regard to the selection of food, I repeat, it would be a mistake to think that people with weak chests should eat different food to that consumed by the healthy, so long as it is nourishing. Also a glass of good wine at dinner may be of some benefit as it tends to act as a tonic, increases the gastric juice, and improves the mental spirit. Wine has also the

tendency to lessen the feverish temperature of the blood. But I warn you against excesses ; habitual alcoholists are particularly predisposed to phthisis. It is self-evident that a variety of easily assimilated food of a palatable nature is of importance. But in this respect, like in many others, indigent sufferers will not have much choice in the matter, and to these private philanthropy may give similar help in feeding the body with wholesome food, as the fresh air leagues do in feeding the lungs with wholesome air. The method might be very simple. If every medical man and every clergyman—who, of all others, come most frequently in contact with the afflicted poor—were to be authorised to issue tickets for good milk and plain, well-cooked food from an establishment especially created for the purpose, much suffering might be alleviated. I, myself, though not a vegetarian, am not an advocate for consuming much meat, not even for those who have hard muscular or mental labour to perform. To eat meat once in a day should suffice for most people. Living in a country which produces large quantities of fruit, a variety of wholesome vegetable

diet is fortunately within easy reach of everybody.

WORK

MORE difficult to answer than the question : What shall delicate people eat ? is the question about the work they may perform. Some occupations are more liable to create consumption than others. I have already mentioned the pernicious effect of an occupation with stooped shoulders and sluggish breathing, especially in a dusty atmosphere. If consumption has fully developed, the afflicted should, if possible, abstain from all kind of work, mental or otherwise. If this cannot be, they should try to adopt work commensurate with the remaining strength of their body. It is impossible to give, in this regard, any specified advice, because every case differs, and the circumstances of every patient differ. In the beginning of chest trouble, some kind of muscular work is decidedly of advantage. If rationally carried on, it is a cure in itself. All of you know the great value of gymnastics and out-door

sports. But gymnastic exercise and outdoor sports are, as a rule, very severe exertions, and therefore unfit in cases of actual disease; they are more of a prophylactic value.

SWEDISH GYMNASTICS

THERE exists now an exercise called 'the Swedish curative gymnastics,' the application of which in its different phases will beneficially influence almost every part of our body. The movements of this kind of gymnastics are passive, active and duplicated. The passive movements do not differ much from the manipulation called 'massage,' which in recent years has made such wonderful strides, though the idea is a very ancient one. The active movements are akin to ordinary gymnastic exercise, but are made in a more gradual and slow manner. The most valuable for healing purposes are the duplicate movements, whose nature consists in meeting a resisting or opposing power. The raising of an arm is called an active movement. But if the arm is raised by, at the same time, forcibly stretching an

elastic belt, it is called duplicated. The best resisting power is the human hand. With it the raising or stretching of any extremity of the body may be made at pleasure. The duplicated movements require naturally more muscular exertion, and therefore draw more effectively the blood towards the muscles in action, relieving the excess of blood in brain, heart or lungs, acting, in fact, similarly to a continous sinapism. In regard to the chest the effect is particularly beneficial. The muscles of the upper arms and of the thorax adhere to our ribs, and rational movements of the former will expand the whole of the chest in such a manner as to make it possible to counteract the danger of a phthisical predisposition. In almost all large European cities such Swedish gymnastic establishments are in existence. Our men of letters and our men of figures, who find little time for any out-door exercise—walking, climbing or gardening—may, by well-conducted duplicated movements, be relieved within a few minutes of the strong flow of blood towards the head, which all ardent mental work induces. I read in the eyes of some of my

listeners the question : ‘How about cycling?’ This question I must leave your private medical adviser to answer, because what may be beneficial in one case, may be hurtful in another.

I have come now to the conclusion of my paper, in which I have condensed much that is open to more elaborate discussion. Much remains to be said, but what I have said may suffice for the present. I have tried to impress on my hearers the possibility of keeping aloof of tuberculosis, or even the possibility of its being cured in the commencement. If chronic, there is no probability of permanent relief. If a man tells you he can cure consumption for certain, do not believe him. If you read advertisements to that effect, do not believe the advertised panacea. No medical man can tell beforehand which will be the strongest power—the resisting strength of our body, or the weakening effect of the bacillular infection. The victory of the former means life, of the latter death—not generally a sudden death, but more often a slow lingering before final redemption.

PRECAUTION

MUCH has been done in the civilised world to assist the human organism in the battle against this tiny and yet so powerful enemy, but much remains to be done. It is a singular fact that all the grand hygienic visible work of modern time—the erection of lofty hospitals, the building of sewers and canalisation, the creation of boards of health—have had little apparent effect in diminishing the death-rate from causes of tuberculosis. And the question is : Can we do more? I think the best we can do is to enlighten the public in regard to cause and effect. Already at school the children should be taught something about hygiene and sanitation. They should learn the art of discrimination, and how to guard themselves against excesses of pleasure, work and passions. Self-respect should be taught, and by advocating plenty of outdoor exercise and not too much animal food, health-injuring habits could best be avoided. The attention of teachers should be drawn repeatedly to the fact that there is such a thing as excess of work in school-

children. Such an excess may obscure the whole future of a child as much as other excesses can do. It is a great mistake to believe that a youth of, say ten years of age, will learn more in eight hours' mental strain daily than in three or four hours. If over-fatigued, the mind should again be prepared for a fresh task ; and this can be done best by light gymnastic exercises, as we find them introduced in most schools in Europe. An overstrain of voice at class-singing may also cause harm to delicate children, though, as a rule, chorus-singing, and singing in general, must be considered a wholesome lung practice. I have heard of an eccentric professional man who was so much impressed with the necessity of giving the lungs, already at an early time of life, repeatedly forcible exercise, that he had his four young children brought to him every afternoon at five o'clock in order to give them a good thrashing—a brutal way of expanding their chests, I must say. The benefit of training in elocution should also not be underrated. I think if many clergymen had gone through a rational training in elocution when young, they would suffer less from

‘clergyman’s sore throat’ in after years ; and besides, in parenthesis be it remarked, they would have less cause to complain of men keeping away from church.

THE DUTY OF THE STATE

THE government of the country or of the different municipalities could further improve matters by superintending the building of houses with regard to ventilation. It could compel every landlord to have a house well cleaned and disinfected before a new tenant relieves an old one. The sleeping berths of steamers and railway carriages should be similarly treated. The government should also set a strict watch to ensure pure milk only being sold. It should superintend the killing of animals, shut all private slaughter-houses, and enforce the establishment of public abattoirs. As a cure of pulmonary phthisis can be effected only at the commencement of the disease, the question is discussable, if the government, by establishing centres for microscopical examination, free of charge, would not assist in inducing people,

suffering from persisting cough, to have their expectorations examined at an early date ; the tubercle bacilli can be detected at a time already, when alarming symptoms of the affection have not, as yet, appeared. And above all, the government could assist in bringing again and again before the public in general, before the lower classes in particular, the great value of the most important sanitary measures. It would be a poor argument to say that such measures have been explained on previous occasions. The public are forgetful and careless, and besides, a new generation comes quickly to the front without having the advantage of previous instruction. If the government were to do so much, I believe it would have done everything in its power to check the spread of consumption. It would be a great folly on the part of sanitary legislation to go so far as suggested by a recent Board of Health of the city of New York, namely, to quarantine all consumptive people. This would not only be inhuman in the extreme, but also criminal in spirit, because many patients would die soon in exile who might have recovered, or, at least, lived much longer, if

surrounded by the tender care of relatives and of home comfort,—a care and a comfort so essential to the sensitive state of their mind and health. Besides, one half of mankind cannot well be separated from the other, for, as I have stated already, tuberculosis is so widely spread, and exists in a latent state with so many, that no one could be said with certainty to be absolutely free from it. Far more philanthropically inspired than the American idea would be the erection of homes in healthy suburbs of cities for the exclusive benefit of reconvalescents from pulmonary affections. ‘Homes for Improved Consumptives’ they call such places in Berlin, in which, against the modest payment of two shillings a day, all necessary convenience and aid are to be found for the further improvement of the health, towards absolute recovery if possible. Medical advice, spacious sleeping apartments, carefully selected food, curative gymnastics,—in fact, everything is included; and those who are able to work may follow their occupation at the same time.

. . . Such, then, is—drawn in a lapidary manner—the nature of pulmonary tuberculosis

and its prophylaxis. Some minor details of my sketch may perhaps be open to discussion, but in the main I am confident that I have painted with truthful colours. And if I have succeeded in interesting my hearers, and become the means of benefiting the health of a single person only, I shall have earned a rich reward for a trifling exertion.

The following letter *re* chorus-singing at school has recently been addressed by me to England's greatest singer. I publish it in this place as in some measure it is of importance in considering the answer to the question : How can school-children keep free from lung affections ?

LONDON, 67 GROSVENOR ST., W.,
July 4th 1897.

DEAR MADAME MELBA,—The conversation we had yesterday about the use and misuse of singing-lessons to children, has forcibly brought to my mind some grave dangers of class-singing at school. I consider the subject of sufficient importance to dwell on it somewhat more exhaustively by letter, than I could do yesterday by word. I am, naturally, very pleased that we are in accord on the principal points of the subject, and I believe that, in raising your voice in judicious warning, whenever occasion

should require it, you would bestow, indirectly, as much happiness to some as you have bestowed direct to all those who have listened to the expression of your divine art.

From a hygienic consideration almost everything speaks in favour of singing. It is in itself an important gymnastic method to develop and strengthen all parts of the organ of respiration. The sooner a child learns to inhale deep and expansive the more rationally will be the development of the chest, and what an advantage sound strong lungs will give to the total organism need not be especially dwelt upon. All physiological functions of the throat may, by help of methodical training, acquire great efficiency; this in children more easily than in adults. The knowledge of this fact was doubtless part of the cause of the introduction of singing-lessons at school, which are not only of a 'physical' advantage to children, but also from an 'ethical' point of view. The perception of musical rhythm, the development of a 'musical' ear, and the memory for music are beneficially influenced. Song is the poetry of music and ennobles the mind of its disciples. So far, so good! Yet it cannot be denied that singing at school, forming part of the lessons, is in many instances detrimental to those who aim at a higher musical standard. Children who show a decided talent for voice-production, and who intend to have that talent developed, should discontinue singing in chorus as early as possible. Listening to 'juvenile' singing-classes, it can easily be noticed how difficult it is, even for advanced pupils, to sing *primo* and *secundo*. The individualisation of the voice is in danger, and the so-called musical ear will never attain a high development so essential for future vocal purpose. But a much graver consideration than the one just mentioned, concerning health itself, is the forced over-production of

the voice. A child from eight to twelve years will find it impossible to sing for a longer time without overstraining the delicate muscles of the throat. The child may not feel the exertion, it may not know about it, or, if it actually should feel tired, does not care to say so. In order to hide the inefficiency of the voice, and in order to keep up with its neighbours, a weak child will often exert its voice so much more the more tired it gets. The result of such forced singing is evident. The most promising voice may, in a very short time, lose the power of song forever. The views just expressed are certainly not resting on theoretical considerations only, but they rest on a long experience in laryngoscopical practice. Repeatedly have I observed children with a sung-out throat, and the relaxed conditions of their vocal chords were similar to those which I have noticed in cases of exhausted public singers and speakers. This remark brings me to the important question : When may children begin to sing? No doubt many eminent singers have commenced to do so at an early age. The powers of singing being, physiologically spoken, nothing else but an activity of the muscles of the throat and larynx, it stands to reason that an early and rational practice of these muscles is very desirable. But the rational practice is more important than the early practice. In most cases we find that the years from seven to nine are the earliest in which regular singing practice should begin. At the age of maturity the voice of girls may not change much in character, but the voice of boys will always change ; singing lessons to the latter should then be interrupted until the throat has re-adjusted itself. This will take one or two years. The higher form of the art of singing should certainly not be taught before that time.

In order not to be misunderstood, I recapitulate :—I. I

am decidedly in favour of singing at school, even in the lower classes. 2. Bodily weak children should not be made to sing for a longer time with stronger children. 3. Children who have a pronounced talent for singing, and for general musical accomplishments, should leave the chorus-classes at an early date, and be instructed privately.

Asking your pardon for troubling you with this long letter,—I am, dear Madame Melba,

With kind regards,

Yours sincerely,

B. SCHWARZBACH.

W E A K E Y E S

WEAK EYES¹

WHO does not complain of weak eyes nowadays? Young and old, rich and poor, male and female—all cry out at times about some weakness of sight. Sometimes the weakness is imaginary only ; sometimes it is but temporary. But often it is real and permanent, caused by disregard of those hygienic measures which are essential for ensuring a healthy state of the organ of sight. The labourer in the open air, unprotected from the glare of the sun and from the irritating influence of dust ; the artisan who is obliged to exert his sight in small, badly-ventilated rooms, devoid of proper light ; men, women and children working in crowded

¹ The chair at this lecture was taken by His Excellency the Acting-Governor of N.S.W., Sir Alfred Stephen, G.C.M.G., C.B.

factories ; the seamstress in want of proper food and rest ; the hard-working office-clerks ; our men of letters, the aristocracy of the mind ; and last, though not least, our school-children—with all these the complaint about weak sight is well-nigh universal. How many times have I not heard such complaints ? and how many times have I pointed out to patients cause and effect with regard to the affection complained of ? But I fear few have put my advice into practice and profited by it. As long as the weakness has not developed to an alarming extent, so as to interfere with the ordinary routine of life, sufferers, as a rule, are quite content to grumble, without exerting themselves in order to obtain relief. If they do consult a medical man they believe that by the payment of a fee their duty to themselves has been fulfilled, and in most cases they fail to carry out the professional advice they have sought and paid for. They know very well, for instance, that bad light is detrimental for eye work, that the organ will become sensitive and gradually diseased if constantly at work in places insufficiently lighted : yet such places are

not avoided. But what is the good of preaching to ears that will not hear? With the full knowledge that a preacher on hygienic or sanitary matters is not unlike a man crying out in the wilderness, it is nevertheless the duty of the preacher to go on preaching, hoping that a stray individual may, by some lucky chance, listen to him and take his words to heart ; and if only that one individual benefits thereby, the work of the preacher will not have been in vain.

Some years ago a letter appeared in the *Times*, expressing the dismay of a prominent medical man in London at the eyesight of the British nation at large being allowed to decline through sheer neglect, while other organs of the body are strengthened by outdoor sports of all kinds. The writer of the letter wishes to know if there is any reasonable cause why perfection of sight could not be sought for as a point of physical excellence in all athletic contests. Why not, indeed? The answer to such a question is, to my mind, simple enough ; for I believe that, in a similar manner to that in which the muscles of the body are strengthened by rational exercise, the power of the visual organ could also be in-

creased. Perfection of sight is as much a matter of practice as is the perfection of muscular activity. A child is born with the organ of sight only, but without the power to see. The development of that power is a matter of practice. So it is with all the senses. It is a well-known fact that the sense of touch becomes marvellously developed in blind people, through the sheer necessity of utilising it. And often have I heard that a practically useless eye has developed into normal power through an accident which destroyed the eye previously relied upon. With proper care and attention the sight of coming generations could be brought to at least the same state of perfection as that our forefathers enjoyed. The concern expressed in the above-mentioned letter was doubtless caused by the consideration that the young urban Englishman—and the young Englishwoman, for that matter—who excels in games of bodily strength and endurance, and who is particularly careful as to outward appearance in regard to teeth, hair and finger-nails, will, at the same time, neglect to a pitiful degree the care of the visual organ, without which

most of the delight of life would remain unkent.

It is not difficult to prove that civilisation has become a Danäic gift in regard to our power of sight. Civilised races have weaker sight than the uncivilised, but the sight of the latter declines in proportion to the advancement of ethic qualities amongst them. The same condition which, in the Caucasian, will develop an ocular weakness, will do so in dark-skinned people. A coloured child, blessed with most excellent sight at the time it enters school, becomes short-sighted or weak-sighted through overwork and bad light, exactly in the same manner as does a white child under identical conditions. The detrimental effects of absence of a proper hygiene to the eye shows itself independently of race and colour.

During my many travels I took occasion to examine the power of sight of members of many tribes living in a state of nature. I came to the same conclusion as other investigators.¹ I found, for instance, that some nomadic tribes have power of sight once again as strong as the Anglo-Saxons. Objects which can be discerned

by the last mentioned at a distance of, say, 1000 feet, can be equally well discerned by some nomads at a distance of 2000 feet. This is, amongst others, the case with most of the Nubians. Also Kaffirs, Hottentots, Zulus, Aborigines of Australia, Maoris and Fijians, whose sight I tested in nearly 3000 instances, have much stronger visual power than the average member of the Anglo-Saxon race. But what appeared to me to be more remarkable was the negative result I obtained in examining coloured people in regard to colour-blindness. Not a single case did I detect in the dark races. Other medical men who, at my instigation, and according to my instructions, made similar tests² in Java, New Guinea, Samoa, Tonga and on the Sandwich Islands, were equally unsuccessful. Considering that partial colour-blindness exists in Europe to the extent of 3 per cent. in males and 1 per cent. in females, am I not justified in believing that this defect also is due to the advance of civilisation? Centuries ago, it probably was as unknown in white people as it is at present amongst the primitive tribes. The assertion that the

ancient Greeks were partially colour-blind, because no distinct mention is made by the authors of their time of the blue sky or the blue sea, is valueless if we consider that even to-day the bestowal of names on exact colours is limited with many tribes. Unlike the Hottentots, who are said³ to have 37 different expressions for colours or shades of colour, the Nubians and the Fijians (to mention two widely-separated tribes) are unable to give a name to certain colours. They, like the ancient Greeks, have no special word for blue, which is called black.⁴ The want of a well-defined expression, however, must not be taken for a want of well-defined recognition. In not a single instance have I been able to detect any hesitation in the perception of even unpronounced shades of colour. But if these people wish to give expression to such shades, they make comparisons, as for instance: this flower is of the same colour as that bird, or the hue of that cloud is similar to the colour of this blossom, etc. Unlike some authors,⁵ I believe that instead of an improvement of colour-sense in man with the advance of time, the opposite takes place.

In mentioning the strong power of sight in primitive tribes, a question arises in my mind, which is often put to an oculist: Are dark eyes stronger and more enduring than light eyes—or *vice versa*? Need I tell you that the colour of the eye has nothing whatever to do with any predisposition to become weak? Anglo-Saxons, having mostly light eyes, complain, perhaps, more of weakness of sight; but this is due simply on account of the indoor life they lead, combined with study, while the Latin races and the Non-Caucasians involuntarily guard themselves against such weakness by a more or less pronounced open-air existence. Also in regard to the beauty of the eye the popular opinion is fallacious. The much-quoted fire and sparkle of the eyeball is nothing but a reflex of light on the surface of the eye, and the beauty of the latter is not regulated by its own shape but by the shape of the surrounding parts, especially the eyelids. The larger the opening of the lids, the larger the eye itself appears to be, while in reality the size varies very little with full-grown people. Similar mistakes exist

in regard to the so-called language of the eye. The eye as such is quite expressionless, and no more able to show the state of the mind of its owner than the heart is able to feel those many emotions which we are in the habit of attributing to it. The movements of the muscles of the face in general, more particularly those of the eyelids and the forehead, are the powerful and only interpreters of the imagined expression of the eyeball. Cover the face all but the eyes, and nobody will be able to ascertain if anger, joy, passion, or sadness prevails in the mind or on the face.

To increase the 'sparkle' of the eye, has at all times been the aim of the more gentle part of humanity among all nations and at all times, and artificial means have often been adopted for accomplishing this. It is not unusual to paint the rims of the eyelids and lashes in order to heighten the sparkle, which seems to radiate from the eye; I know, at least, that this is the custom with the inhabitants of some semi-tropical and tropical countries. Already amongst the ancient Egyptians, Ro-

mans, and Greeks, this custom has, doubtless, prevailed; and with the Jewish ladies it seems to have formed part of their daily toilet.⁶ The painting of eyelids and lashes is not always effected without harm, because several times I have traced an inflammation of the outer part of the eye to such an habit.

The desire to make the eye look sparkling, fiery, and bright, has given to whole nations a predilection for dark eyes—though I must add that with many people the value of a thing increases with its non-possession. We hear, therefore, dark-eyed people often praise the light colour of the iris, and *vice versa*. If we take for a standard of public opinion the views of poets, we shall find, I think, the liking for the different shades of the iris pretty equally divided. But we must not forget that poets, like lovers, judge more by their hearts than by their minds. In some ancient works⁷ we find the light colour of the eye mentioned as a sign of ugliness. I will not attempt, in this place, to quote the most divided opinions occurring in international literature on this subject, but will just mention two names held in about equal

estimation in English literature. Byron repeatedly eulogises the charm of dark-eyed women, while Burns fervently sings the praise of the blue-eyed maiden.

But, no matter how pretty the shape and colour of the human eye may appear to be, as soon as both eyes in one face differ in shape and colour, the beauty of the face is marred. At a still greater disadvantage will be a person with eyes of unequal radiation—I mean squinting eyes. Our æsthetic feeling becomes certainly offended if we look into a squinting face, and that Parisian professional beauty who, after finding her reputation waning, cultivated an artificial squint in order to be again talked about, must be looked upon as an unique experimentalist. But, to an ophthalmic surgeon, the appearance of the defect as such is of minor importance, for he knows that a gradual decrease of the vision-power in one eye is the most serious consequence of strabism. It should always be remembered that a squinting eye is not co-operating with its mate; it leads a life of idleness, so to speak. It is a physiological law that any organ which is not serving its natural purpose in the human

organism will gradually decay. The non-active eye will suffer in power similar to an arm, the muscles of which are made to rest for a long time. Both will, and must, become weak. Not to remove a disfigurement, but to remove a danger to the sight, should be the principal consideration of the medical adviser. I could never understand why so many people hesitate to have the affected eye straightened, because no operation about the eye is more harmless, more certain in its beneficial result, and, since the introduction of cocaine, more painless. In the very beginning, convergent strabism may often be corrected by wearing proper convex glasses. In this, as in all cases, the greatest triumph of therapeutic measures is to effect cures without surgical interference. But where this cannot be done, let no one be deterred by prejudice or incompetent interference from entrusting his, or her, physical welfare into the hands of an experienced surgeon.

I have now come to the more practical part of my lecture, and candidly admit that I have some hesitation in proceeding with it. The organ of sight is so delicate and complicated,

that the least mistake or misunderstanding about taking proper care of it may be hurtful. It would be inopportune for me to give here any other than general advice—and this even not so much as to how to cure a developed eye-affection, as how to prevent the eye from becoming affected. If actually diseased (and few laymen will know where a simple weakness ends and where a disease begins) the professional advice differs somewhat in almost every case. I do not wish to trespass on the domain of your private medical adviser, and I know that more harm than good would be done by specifying cases. Therefore I can only generalise my remarks.

The eye is the organ of light; it is the guide of the light, so to speak, and light is essential for its nourishment, for the normal development of its functions, and for its appearance as to health, beauty, and brightness. People who live for a long time in complete darkness will become blind without any other cause than the want of light. Others, who live constantly in dimly-lighted apartments, incur the risk of developing a weak sight. Of course

extremes should be avoided, because too much light may be as hurtful as too little light. It is my experience that more complaints are heard about the glare and dazzle of too much light than of too little light, and the question most frequently put to an eye-specialist is about protective glasses, *vulgo* 'goggles.'

There was a time when green-coloured glasses were much in use. This colour—as we find it luxuriantly covering field and tree—seems to be especially agreeable to a fatigued eye. But it soon became unpleasant to wear glasses which spread a greenish hue over every object. Besides, after wearing such glasses for a long time, all objects will appear surrounded by a slight yellowish rim for a few moments, and the eye then feels fatigued. Goggles of this colour have therefore been discarded, and blue ones adopted. But these also possess the disadvantage of changing the aspect of objects to such a degree as to make it impossible, for instance, to recognise distinctly the natural hues of a bouquet of flowers. Blue cannot be considered to be a neutral colour. A clear, limpid light will have a

marked influence on the condition of the atmosphere. It aids purification, and thereby benefits the nervous system. Too much light, however, irritates the system, produces congestion, causes headache, and may bring on an interocular inflammation. Instinctively the dazzled eye closes, and seeks refuge in the shade. Weak eyes, in particular, feel more comfortable on dim and cloudy days and in the twilight. The English were the first to construct a glass capable of producing such an effect, namely, a grey, so-called smoked glass. This proves to lessen only the quantity of light without changing in the least the perception of the quality of colours. It furnishes the necessary protection in any light, and thus benefits the traveller on snow-covered fields as well as on the glare-reflecting sea, removing also any pernicious effects of the ultra-violet rays of the spectrum. It produces the effect of a cloudy sky or of the evening light, and is a perfectly neutral glass.

There are people suffering from real or imaginary weakness of sight who never venture into the open air without wearing dark-

coloured 'goggles' of some kind. Yes, many wear them during the whole of the day inside the house, and some, I fear, forget to take them off their noses when going to bed. Such an excess of care is likely to produce more harm than good. The eye may become accustomed to the shade to such a degree as to feel unpleasant if exposed in the least to direct rays of light. But it is impossible to wear goggles on all and every occasion, and exposure of the eye to stronger light must needs take place occasionally. The result of such an exposure would be felt so much more the longer the eye has been guarded against it. Consequently it will suffer more than if rationally trained to bear a certain amount of brightness, which, after all, is necessary for the well-being of the organ.

The eye being in the truest sense of the word the organ of light, the relationship between eye and light should be well considered throughout life from start to finish. Remember that a child is born not with the power to see, but with the power to learn to see. Recognition of objects is merely a matter of

practice. During the first year of its life, a child may try to catch the moon with its hands, not knowing the laws of perspective. It stands to reason that, especially with the young and inexperienced, the sight can rationally develop only in proper light. To these the exclusion of proper light would be even more harmful than to adults. If during the teething period—when the eyes water and become shy of light—the little sufferer would be kept in a dark room, the consequences to the sight may become serious. But mostly sinned against are the eyes of school children. Much has been written on the subject of ‘school and sight’ by better-known men than I am; but as I have for almost twenty years paid special attention to the development and the nature of short-sight, I hope to be pardoned for slightly trespassing also on this domain.

In some parts of Europe the increase of short-sight has become a national calamity. Look at Germany. A hundred years ago short-sight was a comparatively rare occurrence in that country, while to-day almost every pro-

fessional man wears spectacles or glasses. Twenty-six per cent. of the pupils attending school in Germany suffer from short-sight, the evil prevailing to a greater extent amongst the children in the higher classes. In country schools, where the minds of the pupils are taxed to a lesser degree, the percentage of short-sight is only 5, while in the higher schools it increases to about 30. The average of short-sight amongst the students at universities attains the enormous rate of 57 per cent., which fact afforded the late Professor Graefe the opportunity for remarking that children of educated people in Germany are born with spectacles on their noses. The principal causes of the spread of short-sight are the following:—but no! So much has been said and written on the subject that my opinion would only be a repetition of what has been said by others. Let me impress on you only the fact that a congestion of blood in the interocular vessels in connection with a straining of the sight is the principal cause of the development of short-sight in young people, and further, that bad light is in most cases responsible for such a

condition. The steadier and less dazzling the light which falls on our work the less are the eyes taxed when at work. Bright sunlight should be excluded. Light falling on our work from the right side or from behind is also undesirable. Nor should the choice for eye-work fall on a place fronting a window, because in such a position the eye generally receives more light than the paper; this is more especially true of pupils who occupy back forms at school.

All light should fall on our work from the left-hand side, if possible from above, in order that the work should not be obscured by the shadow of the hand or body.

Not only in Germany, but also in England, the complaint about short-sight has noticeably been making headway, justifying fully the attention of scientists and others who feel interested in the public welfare. The British colonies are too closely connected with the motherland by birth and education to be entirely excluded from the latter's influence.

During the many travels which my health has obliged me to undertake, I always took

occasion to enquire into the condition of schools and school-children in different parts of the globe. The examinations I made of the sight of school-children in Cape Colony, Australia and New Zealand were encouraged and assisted by the different school-boards. I will not go into details about these investigations, as such details were, at the time the investigations were made, forwarded to the officials respectively. Suffice it to say, that in about 8000 school-children examined by me, nearly all of whom were born in the colonies, a little over 10 per cent. only of short-sight was detected. Moreover, with few exceptions, the degree of short-sight was not strongly marked. According to *Liebreich*, the average amount of short-sight in English schools is 16 in the 100. I must consider, therefore, the condition of the sight in the British colonies as very satisfactory. The out-door life of children in the colonies may have something to do with checking the progress of myopy, and counterbalancing some dangers to which the eyes of school-children in other countries are generally exposed.

A short explanation as to why the eyes of young people become more easily affected than those of people of maturer age, is, perhaps, due here. When looking at a greater distance than about eighteen inches, the eye is practically at rest as regards the movable part in its interior. By exerting that movable part, by the so-called 'power of accommodation,' the eye makes itself near-sighted in an artificial manner, in order to recognise clearly small objects at a distance of less than eighteen inches. This accommodation-power is most pronounced in youth, and becomes less and less so as we advance in years. The action or inaction of a small muscle inside the eyeball is the cause owing to which we are able to recognise alternately near and distant objects with comparatively equal clearness. But the result of this muscular action is a change in the interocular circulation of blood with regard to its quantity, a change which, if of short duration, will be of no consequence; but if repeatedly prolonged and forced, may do harm to the normal development of an as yet not fully developed eye. The sight of adults may

also become hurt through overwork, but in a less marked manner than in earlier years, when all the organs are still in a state of growth and tender susceptibility. Do not neglect, therefore, to guard the eyesight of your children !

Most people suffering from short-sight inherit, not the evil itself, but the predisposition to acquire it ; some investigators assert that this is so in 60 per cent. of all cases. For the sake of healthy eyesight, I wish to warn all unmarried short-sighted people, that children, both of whose parents are afflicted with this defect, will certainly inherit the predisposition mentioned, and with these the defect will generally develop into a more serious and aggravated form. This remark will not, of course, be much heeded. We know love is blind, and it will certainly not stop at short-sight.

That short-sighted people can, by wearing properly selected concave glasses, regulate their sight just as far-sighted people can regulate their vision by the use of convex glasses, is a too well-known fact to require explanation. I will

raise my voice only to speak a word of warning in regard to the selection of spectacles. Only those having special training are able to select glasses rationally. The spectacles with which we can see most distinctly are not always the best suited to our eyesight. Short-sighted people should use the weakest concave glasses through which they can see clearly at a distance, while far-sighted people should select the strongest convex glasses, by the help of which they can read without effort. But the concave glasses should not diminish, and the convex glasses should not enlarge the size of objects. Care should also be taken that the distance of both glasses in a pair of spectacles should correspond with the distance of the pupils from each other. The centre of the glass should be exactly in front of the pupils, else the value of the number selected becomes uncertain. This applies especially to children, the glasses for whom have generally too big a frame. Before leaving the subject of short-sight behind us, I wish, if possible, to allay the apprehensions of those parents who take this defect in their children too much to heart.

Although it would, of course, be better if anomaly of refraction could be entirely avoided, yet a simple uncomplicated condition of myopy of the eye is neither hindering to eye work, nor must it be considered to be pathological. Very few people will escape wearing glasses at some time of their life. Even a perfectly normal eyeball will, after the forty-fifth year—sometimes sooner, sometimes later—need the assistance of glasses for close work. The decline of the accommodation power in old age⁸ requires such assistance, but in a lesser degree if short-sight prevailed before that power commenced to decline. Moderately short-sighted eyes have some direct advantage over others, because with proper correction they are more enduring for continued work. There is only one condition of the eye suffering from myopy, which must be considered a serious affliction, leading in some cases to hopeless loss of sight. It is this—technically called—progressive myopy, which continues to increase in adults, while the growth of ordinary short-sight generally becomes stationary at about the twentieth year of age. Progressive myopy, though comparatively a rare

occurrence, is the true cause of the outcry about the danger of short-sight generally.

An ordinary anomaly of refraction and accommodation should not be confounded with weak-sight. The latter cannot be corrected by glasses of any kind, because it is due to the inability of the nerve part of the eye to work normally. Often weak-sight is a symptom of a complicated⁹ interocular trouble, or it may be produced by the condition of the general health. The excessive use of alcohol may produce weakness of sight, and in a still more aggravated form if much smoking is combined with much drinking. The effects of alcohol may not be felt to amount to intoxication, yet constant 'tippling' will gradually weaken the physiological power of the optics. I am certainly no advocate of total abstinence, and many arguments brought forward by the apostles of teetotalism could easily be confuted. Generally speaking, I believe mild stimulants to be advantageous to our health. But if 'drinking' becomes a passion, it will certainly injure both mind and body.¹⁰

Often do we hear complaints about a con-

dition of the eyes, which, though not weak-sight in the strict sense of the term, imparts to the eye a sensation of weakness and tiredness. The least exertion of the sight fatigues in such a manner as to unfit it for continued work. On beginning to read, the letters appear to be perfectly clear and distinct, but after a few minutes a pressure, sometimes even a pain is felt in the eyeball, and the letters seem to swim and dance and become blurred. Such a condition is caused by insufficient accommodation to near objects. A well-selected convex glass, occasional rest from eye-work, and perhaps a mild, astringent eye-lotion should be sufficient help to enable such asthenopic eyes to accomplish an ordinary amount of work.

Less fortunate are what I should like to call 'nervous' eyes. The least wind, dust or cold brings on a slight congestion to the outer part, makes them water and feel shy of light, without, however, developing into a defined disease. People thus suffering feel often more annoyed and hindered in their work than others who are suffering from a far more serious affection. Having, moreover, in most cases, a

nervous and impatient temperament, they try many remedies and, alas ! often accept willingly the advice of anyone, be it a, no doubt, well-meaning old lady, an inspired shepherd, or an unscrupulous quack. Scientific men are often believed to have been misguided in the genuine researches they conducted through many years, and the heaven-born healer is in request. That is why in some half-civilised countries blind people form an alarming proportion of the whole population. Sensitive eyes of the nature just described, are more likely to become seriously disordered by severe treatment than by no treatment whatever. Their chief protection lies in carefully guarding against obnoxious influence. A mild, astringent eyewash may help to make the outer lining of the eye less susceptible to irritation. I earnestly warn sufferers not to apply caustic in any form to their eyes without medical advice, because often a supposed inflammation of the outer part of the eyeball is a symptom of a serious disorder in the interior of the organ.

While I mention eyes susceptible of outer influences, I could also allude to those which

become easily irritated by even a moderate exertion, produced by an over-sensitiveness¹¹ of the inner lining of the eye. Without suffering from any organic disease, and without being in need of assistance to their 'power of accommodation,' people thus affected are often in a worse plight than patients suffering, perhaps, from a temporary blindness, removable by an operation. My advice in such cases is a caution against over-treatment. Nature regulates herself best without much local interference. A change of air is often of great benefit.

An injudicious selection of a vocation has much to do with the development of weak-sight. It would be well if, at the termination of school life, a certificate were to be given to each pupil as to the condition of his or her eyesight. The examination of school-children's sight by experts should be made compulsory, and the certificate given should mention what calling in life to avoid, if the sight is defective. With normal sight any vocation could, of course, be adopted, but if it is somewhat weak, an occupation which requires an acute exertion of its power should, if possible, be avoided.

Watchmakers, engravers, draughtsmen, and women doing fine needlework belong to this category. With a still less degree of sight a person should not become a typewriter, mechanic, clerk or book-keeper, and should avoid the strong glare of the fire, to which some engineers and all blacksmiths are exposed. In such cases it would be of more advantage to follow a mode of life which requires more or less out-door existence, such as farmers and sailors lead, or an occupation requiring little eye-work, as is the case with bakers. Some persons are unfit to follow their inclination on account of colour-blindness. Sailors and engine-drivers should, above all others, have a perfect perception of colour. Also a colour-blind draper is not to be envied. The idea of certifying the normal or abnormal sight of school-children is mentioned in this place as a suggestion only, and would require being worked out rather elaborately in order to become generally useful.

But not the schools alone are responsible for weak eyes. Justice compels me to accuse the parents of school-children in an equal, if

not higher measure. Look at the homes of children where the little-ones read and write their school lessons in the twilight, or by insufficient artificial light. A little of this imprudence will do no harm, but if daily repeated for years, a pernicious effect must necessarily follow. Parents, as a rule, do not trouble to watch their children when at work ; they do not prevent them from doing their work in bad light, and they do not interfere with them working in a stooping position. Often the shadow of the hand and body darkens the book, paper or needlework quite unnecessarily, or the sunlight strikes the work in too glaring a manner. Parents also do not protest energetically enough against the widespread habit of half-grown up children reading an interesting novel during part of the sleeping time. I do not object to the interesting novel, but to the reclining position of the head, which assists the flow of blood towards the eyes. And as reading, or any other exertion of the eye, produces physiologically a congestion of the interocular passages, it stands to reason that such a double effect may do harm, all the more so if

the print is small. Matter set up in small type, or badly printed books, are not fit for continual use. In some instances an eye disease is already embodied in the very type of such prints.

I am afraid the preacher in the wilderness does not even find a stray individual who will take all and every portion of his advice to heart, and yet he has to go on preaching. He tells you of the bad habit of reading through a veil, of continued eye-work in a moving railway train, not to speak of cabs and omnibuses or of reading by the firelight. He tells you of the bad habit of exerting the sight directly after a substantial meal, and he could tell you of many other bad habits affecting the eye, were it not that his voice gives way and that he has to change both the key and the tenor of his remarks for the sake of resting himself. . . .

If your eyes feel very tired through overwork, cold local bathing will be most refreshing. Cool soft water applied by means of an eye-douche or soft sponge to the closed lids for a minute or two, is, in many cases, a panacea. But the often-heard advice to open the lids in water, thus, as it were, washing the front part

of the eye itself, is not in accord with proper hygiene. The water is never so pure and never so emollient as the natural moisture of the eye, which, in connection with the aqueduct of tears, does all the necessary cleansing. In old age, however, the aqueduct becomes often blocked and the discharge of the glands is lessened, and, in consequence, a disagreeable dryness is felt under the lids. This sensation induces the sufferers to rub the eyes continually and makes them wink, a habit with many old people which should not be misinterpreted. Hot water applied for a short time is advised here, and fennel-water with an addition of 5 to 10 per cent. of opium tincture forms a relieving eye-wash.

The human eye, or better the eyelids, should always be well cooled before bedtime. The water applied need not necessarily be quite cold, and in order to make sure of its purity it should be sterilized or at least filtered. A drop or two of a concentrated permanganate of potass lotion, *vulgo* Condyl's fluid, would help to purify the water and promote disinfection. We should bear in mind that the mucous-membrane of the eye is a favourite breeding-place for some species

of micro-organisms, which, in most instances, are fortunately of a harmless nature. But there are exceptions. Diphtheria, tuberculosis, erysipelas and other gravely infectious diseases may be introduced through the eye. More particularly do I wish to mention here an affection which is the cause of about one-third of all cases of blindness in children and more than one-tenth of the blindness existing in general. Of about 300,000 blind persons in Europe, over 30,000 have contracted this infirmity in infancy through purulent inflammation. But since it has been proved¹² that the highly infectious nature of the disease is caused by a coccus, the disease itself has commenced to decline in consequence of the application of preventative measures. The nature of the discharge is such, that one drop, or part of a drop, of it coming in contact with a healthy eye, may destroy it in a very few days. The advice of the 'Ophthalmological Society of the United Kingdom' to consult at once a medical man if the eyelids of new-born children become red, swollen and watery, should be well taken to heart. As with most diseases, prevention here is much easier than cure. And

the prevention of this most serious affection is very simple. If, soon after birth, a drop of a weak lotion of nitrate of silver is applied to the eye, the germ of the disease would be destroyed without any hurt to the organ itself, and much trouble, anxiety and, perhaps, misery may be avoided. In the lying-in-hospitals in Germany, where formerly 10 per cent. of all children became affected with the inflammation mentioned, there has been, since the introduction of such preventatives, only 1 per cent. of sufferers. It may be reasonably supposed, that if this simple prophylactic measure were to be generally adopted, in private practice as well as in hospitals, the army of blind persons in Europe would be reduced about 30,000. In the modern treatment of eye diseases, especially in eye surgery, the knowledge of the destructive influence of bacteria has celebrated its chief triumph. Before this knowledge was attained, many eyes treated surgically were lost through suppuration of the wound, and notwithstanding the most perfect display of technical efficiency in the operation itself. Sixty years ago, every fifth eye operated on for the removal of catarrh was lost ; thirty

years ago every twentieth eye perished, while to-day the loss of such an eye is a very rare occurrence indeed. By strictly following the laws of antiseptic treatment, the apprehension as to the destructive power of germs has become greatly reduced.¹³

I am coming to the end of my lecture, but before concluding, I desire to mention two or three items of some little importance to those who are nervous or at least anxious about the well-keeping of their visual organ. Some people feel alarmed on noticing, occasionally, black specks floating in front of their vision. Almost everybody can observe such specks by directing the gaze to a bright-looking surface—for instance to a blue sky or a wall painted white. The specks technically called ‘*mouches volantes*,’ which means ‘flying mosquitoes,’ change their position according to the movements of the eyeball, and are caused by small opacities in the jelly-like filling of the eyeball, or rather by the shade which these opacities throw on the retina. I myself have in my left eye some of these ‘*mouches*,’ which change their position and form frequently. Sometimes they appear to me like

a string of pearls, sometimes like a ring, and at other times they seem to be disconnected. As long as they do not multiply they are of no importance. Only if rapidly increasing, or if obstructing the sight, professional advice would be required.

Another item I wish to mention, is in regard to foreign bodies on the eye-surface. Which of us has not had the unpleasant sensation of something having penetrated into the eye,—be it an insect, dust or cinder, or something worse. Our first impulse is to rub the affected eye, and by doing so we increase, in most cases, the suffering and may produce serious inflammation. If the foreign substance is not adhesive to one particular spot, it would be more rational to apply a gentle rubbing to the unaffected eye. The flow of tears thus caused may also relieve the other eye and wash the intruder away. Never attempt to remove by force a foreign substance from your eye. If this be done clumsily it may seriously injure the organ. Any medical man could give instant relief.

If the eyeball becomes inflamed, be it the result of an accident, of infection, or of a

cold—and few of us will escape in our lifetime some kind of ophthalmia—remember that in such an event the proper treatment varies in almost every case. If a discharge from the eye becomes somewhat profuse, thick or yellowish, it will in all probability be of an infectious nature. The acute granular inflammation of the lids—so-called Egyptian eye disease or sandy blight—is typical thereof. The slightest particle of discharge coming in contact with the mucous-membrane of a healthy eye will cause a similar affection. As a rule the seriousness or non-seriousness of the affection is regulated by certain conditions of life. We often find that the infected eye becomes more seriously diseased than is the infecting eye. This power of contagion possessed by ‘sandy blight’ is the secret of its often taking the form of an epidemic occurrence. Whole schools and all the inmates of asylums, hospitals, prisons and barracks, are sometimes suffering from it. I think we must principally attribute its rapid spread to the flies, as such epidemics come on notably during the fly-season. In Egypt, where about ten per cent. of the whole

population has defective sight, the flies are considered to be the prime cause of this national calamity.¹⁴ But also towels, napkins, handkerchiefs, washing water and soap, used in common with the afflicted, may help to spread the disease. Especially the 'roller towels,' emblematic of country inns and the sleeping-rooms of proletarians, are means for conveying the poison from one eye to the other, and are thus responsible for much harm. In ordinary, not too severe cases, great cleanliness, fresh and pure air, a weak, disinfecting, and, at the same time, astringent eyewash, and, if necessary the isolation of the patient, are the simplest measures for suppressing the evil.

Much have I yet at heart, which I would like to convey to you with regard to the functions, the nature and the care of the human eye. But I remember that a little advice is often more valuable than too much of it. However, before concluding, I am bound to impress upon you the truth, that care of your eyes without care of your whole system is sheer nonsense. Hypocrates' saying, 'Like

the eye, so the body,' applies to all times. The eye is in specially sympathetic connection with other parts, by virtue of its complicated structure. It is the reflection of the general health of a person. By examining the sight and the interior of the eye, the experienced observer can recognise other, even distant disturbances in the organism. He can often detect affection of the spinal chord, some diseases of the lungs, heart and kidneys, intercranial tumours, blood diseases and others. Many people believe that care of the visual organs is only of local importance. Quacks and manufacturers of eye-lotions and ointments gain an easy livelihood owing to this belief. For nothing in the world is more convenient than to expect wonders of a local application, without inconveniencing the usual habits of life. A rational physician has to direct his attention much oftener to the habit of life than to local nursing. To what a high degree our organism is influenced by our sight is noticeable in looking at the pale, unhealthy appearance of blind people. Wine drunk out of a teacup is but a poor enjoy-

ment, and seeing meat on our dinner-table cut with scissors would take our appetite away. But the most remarkable proof of the relationship between eye and body are shown by certain animals, which involuntarily adopt the colour of their surroundings. A chameleon will be green amongst green leaves and grey on the grey sand. Deprive the chameleon of its sight and it would be unable to bring its own colour in harmony with surrounding colours. Yet our mind will be influenced even more than the body by our most precious organ.

But is it after all correct to call the sense of sight the most precious of our senses? Is not, with some, the sense of hearing, the sense of feeling, or even the sense of taste considered more precious? ¹⁵ 'Would you rather be blind or deaf?' is a queer question frequently heard and generally answered: 'I would rather be deaf than blind.' On first consideration it may indeed seem that the loss of vision would make a human being more unhappy than the loss of hearing. To be unable to gaze upon nature's grand and

beautiful works, to be deprived of the joy felt in looking into the eyes of those we love, to be excluded from the enjoyment of all that the eye enables us to recognise and to admire is indeed a hard and apparently unbearable fate. And as regards deafness? Well, yes, to be deaf must be very annoying and uncomfortable, and the consequences of this defect must be detrimental to the mind, yet the torments of blindness are no doubt incomparably greater. Will this opinion hold good after mature consideration? I feel inclined to doubt it. Individual circumstances and predilections must naturally be considered. But I venture to assert, on the basis of frequent intercourse with the absolutely blind and the absolutely deaf, that the latter if they acquired deafness after infancy are far more unhappy, suspicious and misanthropic than the former. Deaf people are almost totally excluded from social enjoyments, the supply of their mental wants is made difficult, and what is most human in our nature, the direct exchange of mental intercourse is impeded and often rendered im-

possible. If the eye is a great educator, the ear is a still greater one. 'There is nothing in our mind which did not previously exist our senses,' is a very old knowledge.¹⁶ If we watch closely the mental life of the blind we shall find that they lead a more contented and comparatively happier life than the deaf.

So much then about the organ which is praised as no other is praised, and at the same time neglected as no other is neglected. If I have succeeded in reanimating in some of you the sentiment of happiness which must fill the breast of every grateful child of creation when, on awakening in the morning, it joyfully greets the light of day—my effort has not been in vain. I quote one of my earliest teachers, the late Professor von Graefe: 'The full value of the blessing of sight can only be appreciated by those who have had, but possess it no longer.' And Schiller remarks in one of his dramas:

'Sterben is nichts, doch leben und
nicht sehen—das ist ein Unglück!'

APPENDIX

(1.) HART, Cohen, Virchow, and others.

(2.) Holmgreen's wool test.

(3.) Theophilus Hahn, Cape Colony.

(4.) A detailed account of these investigations I gave in a lecture delivered before the Geographical Society of Berlin. It is a curious fact that with the Nubians, as well as the Fijians, only five precise names seem to exist for colours. But while the former have one expression only for yellow and green (*sotei*), and one expression for blue and dark colours (*hadel*), the latter distinguish vocally yellow (*dromo-dromoa*), and green (*kara-karua*), while calling all shades of blue and all dark colours, including black, with one name (*loa-loa*).

(5.) Magnus, Gladstone, Geiger, and others. It is doubtful whether, with the ancient Greeks, the word *κυανέος* did not have a different meaning than at a later period.

(6.) Jeremias iv. 30.

(7.) Cicero, Horaz.

(8.) Presbyopia.

(9.) It is not generally known that, of late years, short-sight has been successfully checked, and the sight of short-sighted eyes improved, by surgical intervention. If nothing else will stay the advance of the evil, the removal of the crystalline lens will do so. I admit that at first I followed rather reluctantly this practice. But having tried the operation in several desperate cases with remarkable success, I have become enthusiastic of a method by which formerly almost useless eyes are enabled to read ordinary print without glasses.

(10.) With a few people certain drugs have a marked influence on the sight. I know of cases where even small doses of quinine brought on temporary blindness. And a Mr Holaday published an article in the *North American Review* detailing the bad effect which the drinking of even small quantities of strong coffee has on his own eyesight.

(11.) Hyperæsthesia.

(12.) By Professor Credé in Leipzig.

(13.) It is well known that Mr, now Lord, Lister may claim to have given the greatest impetus to anti-septic treatment of wounds generally.

(14.) The knowledge of the appearance of granular ophthalmia is as old as history itself. The great hieratic manuscript, which Professor Ebers discovered in 1873, has been written in the 16th century A.C. Of the 110 pages, 8 are devoted to the 'Book of the Eyes.' Granular ophthalmia is very clearly described on page 57.

(15.) With some uncivilised tribes the sense of taste

is certainly the most valued sense. 'I need not see, but I must eat,' is a Malayish proverb. Interesting is it also to know that in the South Sea, where the inhabitants of many small islands are constantly intermarrying, no form of that morbid condition of the eye seems to exist, which, in civilised races, is a not unfrequent cause of incurable blindness in the children of near blood-relations.

(16.) *Nil in intellectu quod non prius fuerit in sensu.*—
(ARISTOTLE.)



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